

REMARKS

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested. Upon entry of this amendment, claims 1-9 and 11-19 are amended, leaving claims 1-19 pending with claims 1, 8 and 18 being independent. No new matter has been added.

Applicants appreciate the indication that claims 5, 6, 9 and 14-19 include allowable subject matter.

Rejections Under 35 U.S.C. §103(a)

Claims 1, 2, 4, 8, 11 and 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iketani (JP 2004-962215) (hereinafter referred to as “Iketani”).

Applicants submit that the claims as now pending overcome the cited prior art.

With respect to amended independent claim 1, claim 1 now recites, among other things, a method of manufacturing a display panel comprising, providing a supporting bed, the supporting bed including a first supporting bed and a second supporting bed positioned on the first supporting bed, the first supporting bed having a first thermal expansion coefficient, the second supporting bed having a second thermal expansion coefficient and the second supporting bed having a first surface with a perimeter, forming a material layer on a substrate, the substrate having a third expansion coefficient and a second surface, placing the substrate on the second supporting bed such that the second surface of the substrate touches the first surface of the second supporting bed and the second surface of the substrate is positioned entirely within the perimeter of the first surface of the second supporting bed, and heating and baking the material layer formed on the substrate, while maintaining the position of the second surface of the substrate entirely within the perimeter of the first surface of the second supporting bed, wherein a difference between the third thermal expansion coefficient and the first thermal expansion coefficient is smaller than a difference between the second thermal expansion coefficient and the first thermal expansion coefficient.

Thus, in the embodiment covered by the present claim, the substrate of a display panel is

placed on the second supporting bed (to be more specific, the substrate touches the second supporting bed), and the second supporting bed is positioned on the first supporting bed. Furthermore, the second supporting bed is made of such material that a difference in the thermal expansion coefficient between the second supporting bed and the substrate is smaller than a difference in the thermal expansion coefficient between the first supporting bed and the substrate.

The foregoing structure enables prevention of scratching of the substrate due to the difference in the thermal expansion coefficient between the substrate and the second bed during the heating and baking of the substrate, since the substrate touches the second supporting bed.

Iketani discloses a first supporting member (11b, 21b, 31b) which the Examiner contends corresponds to the first supporting bed of the present invention, and thermal expansion regulating member (24, 34) which the Examiner contends corresponds to the second supporting bed of the present invention. In other words, even at best, the panel (i.e. substrate) is not placed on the thermal expansion regulating member (24, 34), but it is placed on the support (11c). Furthermore, the thermal expansion regulating member (24, 34) has a thermal expansion coefficient almost equal to that of the panel.

Additionally, Iketani is silent about a thermal expansion coefficient of the support which touches the substrate, and silent about friction and scratches between the substrate and the support.

In the structure disclosed in Iketani, the panel and the second supporting bed have the same thermal expansion coefficient, i.e. they are made of the same material. This structure may arguably allow prevention of scratches between the panel and the second supporting bed, but incurs more scratches between the second and the first supporting beds. Thus, this device will need significant maintenance on the surface where the substrate is placed, so that the supporting bed requires careful attention when it is repeatedly used, which lowers the productivity.

Therefore, Applicants submit that since Iketani neither discloses nor renders obvious all of the elements of independent claim 1, claim 1 and its dependent claims are allowable over the cited prior art.

Independent claims 8 and 18 are allowable for substantially similar reasons. With respect

to independent claim 8, the cited prior art fails to disclose or render obvious a supporting bed comprising: a first supporting bed having a second thermal expansion coefficient, and a second supporting bed having a third thermal expansion coefficient and a second surface with a perimeter, the second supporting bed being configured to be placed on the first supporting bed, wherein a difference between the third thermal expansion coefficient and the thermal expansion coefficient of the substrate is smaller than a difference between the second thermal expansion coefficient between and the thermal expansion coefficient of the substrate, and wherein the second supporting bed is configured such that when the substrate is placed on the second supporting bed, a surface of the substrate touches a surface of the second supporting bed and the substrate is positioned entirely within the perimeter of the surface of the second supporting bed.

With respect to claim 18, the cited prior art fails to disclose or render obvious a supporting bed for heating and baking a substrate, the substrate for use in a display panel and having a first surface and a first thermal expansion coefficient, the supporting bed comprising: a first supporting bed having a second thermal expansion coefficient; and a plurality of second supporting beds defining an outer perimeter, each of the second supporting beds having a second surface and a third thermal expansion coefficient, the second supporting beds being configured to be placed on the first supporting bed; and a regulating section configured to limit each of the plurality of second supporting beds in a thermally expanding direction; wherein a difference between the third thermal expansion coefficient and the first thermal expansion coefficient is smaller than a difference between the second thermal expansion coefficient and the first thermal expansion coefficient, wherein a portion of the substrate is configured to be placed on each of the second supporting beds such that the first surfaces touches each of the second surfaces, such that the substrate straddles the plurality of the second supporting beds, and such that the substrate is positioned entirely within the outer perimeter; and wherein a distance between a center point of the substrate straddling the plurality of the second supporting beds and a thermal expansion center point of each of the second supporting beds is related to a thermal expansion coefficient of the substrate and a thermal expansion coefficient of the second supporting bed, and the relation is expressed by:

$$e < 1/(2 \times (\text{difference in thermal expansion coefficient between the substrate and the}$$

second supporting bed) $\times T_f$), where, e is the distance between the center point of the substrate and the thermal expansion center point of each of the second supporting beds, and T_f is the baking temperature.

Claims 3, 7 and 12 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iketani in view of Ritter et al. (US 5,984,748) (hereinafter referred to as “Ritter”).

Claim 10 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Iketani in view of Yonehara et al. (JP 2003/051251) (hereinafter referred to as “Yonehara”).

Both Ritter and Yonehara fail to overcome the deficiencies of Iketani. Therefore, each of these claims is allowable over the cited prior art. Specifically, neither of these references disclose or render obvious, either alone or in combination with Iketani, a substrate that is placed on a second supporting bed (to be more specific, a substrate that touches a second supporting bed), and the second supporting bed being placed on a first supporting bed, as claimed. Furthermore, the prior art references both alone and in combination fail to disclose or render obvious the second supporting bed being made of such material that a difference in the thermal expansion coefficient between the second supporting bed and the substrate is smaller than a difference in the thermal expansion coefficient between the first supporting bed and the substrate.

Therefore, since the cited prior art fails to disclose or render obvious all of the element of at least the independent claims, Applicants submit that all the pending claims (i.e., claims 1-19) are allowable over the cited prior art.

In view of the foregoing amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Should the Examiner believe there are any remaining issues that must be resolved before this application can be allowed, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Hiroyuki YONEHARA et al.

/Jeffrey J. Howell/

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Jeffrey J. Howell
Registration No. 46,402
Attorney for Applicants

JJH/CRW/kh
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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